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Industry and sustainable development

Report of the Secretary-General

Addendum

Industry and environmental protection*

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98-03051 (E) 230298 260298

I. Introduction

1. Business and industry play a crucial role in the economic and social development of countries. The production of industrial goods and services involves the extraction of natural resources, their utilization in the manufacture of products, the disposal of waste, and the distribution, use and disposal (including reuse and recycling) of the final product. Environmental impacts can occur with varying degrees of risk along this entire industrial life cycle, and appear as local, regional, transboundary and/or global environmental problems. Many industrial processes are themselves hazardous and can result in serious accidents with harmful effects to human health and the environment.

2. Although industry is a major user of natural resources and a direct or indirect source of pollution and other environmental impacts, business and industry must remain a key partner in the common endeavour to achieve sustainable development. Business and industry have the technology, know-how, resources and the entrepreneurial spirit to innovate, which can be used to achieve environmental goals and objectives.

3. The environmental impacts of industrial activities are relatively well known, and appropriate responses to these impacts continue to be discussed in a number of international and national forums. What is now crucial is the urgency for action. Although both industry and Governments have responded considerably to the challenges legitimized at the 1992 United Nations Conference on Environment and Development, the response remains localized, particularly in multinational corporations and developed country Governments. What is now required is a concerted effort by the international community to encourage all Governments and industries – both large and small – to respond and to act.

II. Industry's impact on the environment

4. The main environmental impacts of industrial activities are becoming better known and understood, and an assessment of these impacts leads to a number of key conclusions that need to be taken into account when developing and implementing responses to them. It is increasingly evident that the environmental consequences of industrial emissions and discharges to specific media (air, land, water etc.) are interrelated and rarely localized in one medium. Unfortunately, many policies currently being implemented by Governments are medium specific and can lead to the transfer of pollution from one medium to another. Consequently, there is a need for an integrated, holistic approach to environmental policy.

5. In addition, the scale of environmental impacts is increasing. In particular, the time lag between emission, impact and ultimate environmental or health consequences is becoming longer. Although environmental impacts can be most evident at a local and/or regional level, the environmental problems stemming from industrial activity are influencing the global environment and therefore require global solutions. There is also an increasing dispersion of environmental contaminants, which may lead to long lasting impacts that are often not well known or understood.

6. Many Governments, particularly in developed countries, have adequate systems in place to monitor air and/or water quality. However, in addition to monitoring emissions, there is now an urgent need for Governments to also monitor the consumption of natural resources by industry and to correlate the consumption of natural resources with environmental degradation.

III. Policy challenges for government and industry

7. The role of Governments is to provide leadership through an integrated policy approach and regulatory framework that sets clear environmental goals and objectives for business and industry. Governments also play a crucial role in monitoring environmental quality and the environmental performance of business and industry to ensure that these goals and objectives are being met. To facilitate a smooth transition towards sustainable development, Governments, together with local authorities, must design an appropriate enabling framework. The establishment of national environment/sustainable development strategies called for in Agenda 21 provide the opportunity to design such frameworks.

8. Although national environmental policy plans (NEPP) need to reflect national priorities, experience has shown that successful national environmental policy plans are designed through the following policy cycle: planning (setting environmental goals and objectives); implementation (regulations, market mechanisms); monitoring (of implementation of plans, environmental quality and industry environmental performance); and corrective action.

9. A number of planning tools, such as strategic impact assessment and environmental technology assessment, are currently used by national Governments to help support the

development and application of environmentally sound technologies, risk assessment for the environmentally sound management of chemicals, environmentally sound siting and planning of industrial activities, and monitoring and state-of-the-environment reporting. The planning (siting and zoning) of industrial activities to avoid or minimize environmental impacts has been weak or non-existent in many countries. In addition, the integration of environmental considerations into the design of various public services, such as transport, energy and infrastructure development, is needed.

10. Environmental impact assessments (EIAs) are widespread and their increased use has improved environmental sensitivity in decision-making at the enterprise level. However, EIAs are not always used effectively, mainly due to a lack of baseline data, little provision for cumulative and synergistic assessment of impacts from a number of sources, and a general lack of monitoring. In addition, conclusions drawn from EIAs are often not taken into account in the decision-making process, nor are EIAs used in conjunction with other planning tools, such as risk assessment and contingency planning.

11. Industrial polices set within the NEPP framework should include an integrated approach to environmental management that focuses on prevention rather than cure, and extends producer responsibility to encourage the practice of shared responsibility for the environmental impact of products among the designers, suppliers, manufacturers, distributors, users and disposers of those products.

12. Most countries have designed regulatory frameworks to control industrial operations by setting emissions standards. These command-and-control regulations have been used with varying degrees of success. In particular, expertise and institutional capacity for the development, implementation and enforcement of environmental regulations are weak in many countries. Furthermore, there is often an unclear division of responsibilities among government authorities. Recent experience demonstrates that the environmental performance of industry can best be improved by a judicious mix of instruments, including incentives as well as restrictions, that facilitate innovation and complement economic policies. The continuing liberalization of trade will also require Governments to further develop and implement appropriate regulatory frameworks.

13. Environmental regulations and the corresponding compliance and enforcement schemes have often been designed to tackle a single-medium problem, such as solid waste, water or air pollution, and fail to recognize that pollutants move from one medium to another. Emission standards with short-term objectives also tend to encourage end-of-pipe controls, such as treatment plants, filters and scrubbers, leading to the transfer of pollutants between media as well as high investment costs, with no economic payback. Integrated approaches and the setting of long-term quantifiable goals rather than prescribing specific technologies can encourage the adoption of cleaner technologies and preventative measures in industrial facilities.

14. Economic instruments, such as taxes, levies and other fiscal instruments, are increasingly being applied by Governments worldwide. However, few economic incentives, if any, have actually replaced regulations, because most have been introduced with the primary objective of increasing government revenues rather than altering behaviour towards more environmentally sound activities. Taxes, for example, are usually not set high enough to internalize environmental externalities, and therefore do not make the "polluter pay". Although some progress has been made, pricing policies still need to be dramatically reformed so that environmental externalities are internalized and producers, transporters and consumers of various commodities face the full environmental costs of their activities and ultimately reorient their consumption patterns. Some subsidies artificially lower prices for natural resources, which are then often used profligately, creating both pollution and shortages. The environmental impacts of subsidies need to be studied further and appropriate steps should be taken.

15. Currently, most national accounts fail to include many activities that entail environmental modifications or the use of natural resources with potential environmental impacts. Alternative national accounts, which could measure the total use of natural resources that national economic activity requires, would support policies that encourage the efficient use of natural resources, and would lower material requirements and environmental impacts throughout the materials cycle.

16. Voluntary programmes are a relatively new environmental policy instrument, pioneered by such countries as the Netherlands, Canada and Germany. Voluntary programmes to mitigate energy-related carbon dioxide (CO_2) emissions have been implemented or are being developed in many nations in the Organisation for Economic Cooperation and Development(OECD). They can take many forms, and are best combined with other policy instruments. For example, voluntary codes of conduct can aim to facilitate and accelerate research and development. At the other end of the spectrum, negotiated agreements are often designed to reach numerical targets and/or specific

performance goals. Market-based trade between electric utilities, notably in the United States of America, of CO_2 reductions for sulfur dioxide allowances has reduced both acid rain and greenhouse gas emissions. More flexible, voluntary approaches to environmental regulation need to be explored within NEPPs. In particular, the benefits and feasibility of tradable permit programmes should be further explored.

17. Monitoring of the environmental performance of industry is an ongoing challenge in most countries. Some success has been reached through state-of-the-environment reporting and toxic release inventory types of reporting. It is also important to extend such efforts to include industry's consumption of natural resources, and to correlate the consumption of natural resources with environmental degradation, which will ultimately require the development of national indicators with which to benchmark the environmental performance of industry.

18. Many industries in all regions of the world lack the appropriate information, expertise and know-how to improve their environmental performance. Governments can support the shift to cleaner eco-efficient industries through a variety of support measures. For example, green procurement policies and eco-labelling programmes can stimulate the market for greener products. Governments can provide information and technical/managerial advice to industry, and can support locally relevant investment in research and development. Educational curricula in engineering and business programmes should incorporate the prevention approach, and training programmes for business and industry leaders on environmental management need to be developed and/or supported. Governments can also develop innovative financing programmes to improve and facilitate access to capital for small businesses and communities so that they can more easily invest in cleaner, more eco-efficient practices. Measures should also be taken to facilitate the transfer of technology and managerial know-how between one industrial sector and another, and between large and small companies.

19. Government regulations and – increasingly – public pressure have been the initial drivers in pushing business and industry to address environmental issues. Many companies now recognize the importance of environmental issues, and transnational corporations, in particular, have started to realize the competitive advantage of reducing environmental impact while creating economic value. However, the scale of change required to move from "business as usual" to sustainable development will require a well articulated vision of what the sustainable enterprise should be, which will require leadership and innovation for the business community as a whole.

20. The technology response of business and industry to environmental issues has been developed at three main levels: (a) treatment technologies, aimed at reducing emissions and waste after they have occurred (end-of-pipe); (b) recycling wastes back into the production process; and, (c) cleaner production and eco-efficiency through the prevention of pollution and waste generation at the source of production (preventive approach). Business and industry has made considerable progress in developing new technologies, in particular monitoring and information technologies. However, the long-term, indirect and unanticipated effects of new technologies have often been overlooked.

21. Waste is increasingly being treated as a raw material and less as something to be disposed of. For example, scrap steel in tonnage terms is the world's most recycled material. Through recycling, the steel industry extracts less natural iron-bearing ores, saves energy and reduces CO_2 emissions. However, recycling of steel can also be very energy intensive. In the pulp and paper industry, for example, a study found that recycling processes use less energy than virgin pulp based ones but generally rely more on fossil fuels, with the result that greenhouse gas emissions could increase with higher levels of recycling.[1] Clearly, recycling is a feasible option in some industry sectors; however, it is not the panacea for all environmental problems.

22. Cleaner and safer technologies and strategies that aim to prevent emissions and waste at source can also reduce environmental impacts over the entire product life cycle from materials extraction to final disposal. Depending on the market price of raw materials and local treatment costs, such an approach can also result in significant economic savings, as well as environmental benefits. Hence, the term eco-efficiency is also being used to define this approach.

23. Clearly, there is also a need to substantially increase the resource productivity of raw material use. The ultimate expression of this trend will be a shift within corporate management from a product-focused strategy to a service-focused strategy that satisfies the same consumer demand. A demand-side strategy will also need to be further developed with industry in order to delink people's needs (and satisfaction) from the consumption of natural resources. This will require consumption patterns to change, moving from quantity (consume more) to quality (consume differently).

24. The search for innovative and cost-effective ways to improve industry's environmental performance has also led

to the development of a wide array of environmental management tools. Such tools can be used by companies and Governments to direct industry towards environmental improvements and cleaner production. The large environmental management system (EMS) "toolbox" now includes specific tools that enable companies to: (a) assess and evaluate the environmental impacts of their processes, products and operations (for example, cleaner production assessment and EIAs); (b) manage their environmental aspects (such as eco-design and eco-labelling); (c) communicate with their stakeholders, such as environmental reporting and supply chain management; and (d) monitor their progress and compare it with that of other companies (for example, benchmarking, and environmental performance indicators). New environmental management tools, such as environmental accounting, in which the price of goods and services reflect real environmental costs, will need to be developed and widely implemented by business and industry. In addition, verifiable and enforceable performance goals will need to be set in consultation with stakeholders.

25. Industry sectors that have not yet incorporated the environmental dimension into their daily operations will need to be encouraged to do so. The consulting service sector, for example, is just beginning to integrate environmental concerns into their decision-making process. This sector, which often acts as the "prescriber" of good practice, has a crucial role in ensuring a sustainable, preventative approach is implemented in the management practices of companies worldwide.

26. In 1996, the International Organization for Standardization (ISO) published an EMS standard (ISO 14001). As of November 1997, more than 2,000 companies worldwide had obtained ISO 14001 certification. These standards can bring important benefits for companies since an EMS can be a useful tool to increase resource efficiency and achieve savings. Several countries are taking a proactive approach to ISO 14001, and are promoting its implementation at the national level. It is essential that ISO 14001 certifying organizers are properly trained and are mutually recognized around the world.

27. There are, however, a number of barriers to implementing an EMS. For example, the costs of implementing an EMS may be higher for companies in developing countries than for their competitors in developed countries. Small and medium-sized enterprises (SMEs) in both developing and developed countries have little awareness of EMS and the corresponding ISO standards; in most countries, few SMEs have access to appropriate training and assistance. There is also concern that to the extent that ISO 14001 certification becomes a de facto condition for doing business, it may act as a non-tariff barrier to trade for developing countries if conformance with the standard is costly or difficult to achieve for companies in developing countries.

28. Government regulations have been the initial driver in industry's response to environmental issues. There is, however, a growing trend among a variety of stakeholders to hold companies accountable and responsible for the environmental impacts of their operations and products throughout their entire life cycle. Many stakeholders are further demanding greater transparency from industry. Financial institutions, for example, have begun to demonstrate an interest in the environmental strategies of companies, and are increasingly demanding standardized information to evaluate company risk and performance. Some banks, insurers and equity markets believe that sound environmental management leads to risk reduction, which is valued by financial markets. This is an encouraging development which should be supported and further encouraged.

29. Industry, primarily through industry associations, responded to the growing demands of stakeholders by developing voluntary codes of conduct, charters and codes of practice. Agenda 21 endorses this voluntary approach, and encourages business and industry to use such codes to promote best environmental practice. Examples include the International Chamber of Commerce business charter for sustainable development and the chemical industries' responsible care initiative. Many stakeholders, however, remain unconvinced about the results achieved from such codes of conduct since they are rarely monitored and/or enforced. Effective monitoring and follow-up programmes need to be developed to ensure that codes of conduct do not remain just words on paper.

30. Some companies, in particular multinational companies from industrialized countries, have begun to voluntarily disclose information on their environmental activities and emissions through company environmental reports (CERs). Before 1990, CERs were rare, but each year the number and quality of such reports is increasing. One of the major benefits to companies of the CER is that it serves as a powerful force for internal organizational change, and is also increasingly seen by companies as a means to greater accountability and not an end in itself. But although company environmental reporting has improved considerably in the past eight years, significant challenges remain. For example, CERs rarely detail the operations of multinational companies in developing countries, nor is the reporting practice widespread. A limited number of national

industry associations report the aggregate environmental performance of their member companies. This sector-wide environmental reporting is a positive step and should be encouraged.

31. There appears to be a growing trend for companies to have their CERs externally verified. Such external verification needs to be increasingly undertaken in order for CERs to be deemed credible by stakeholders. In addition, reporting frameworks will need to be standardized without constraining innovations in reporting. This will ultimately require the development of common indicators and metrics from which to measure the environmental performance of business and industry. These indicators should be developed in a transparent consultative process involving stakeholders and taking into account current efforts to develop macro sustainable development indicators.

32. A number of companies have also begun to work in partnership with their stakeholders to realize common environmental goals. The aim of most of these partnerships has been to move from positions of confrontation to positions of mutually agreed and understood interdependence. Despite an increasing acceptance of their value, the awareness and experience of cross-sector partnerships remains limited. Although anecdotal evidence of their benefits is growing, there is still much to learn on how to structure, manage and replicate them, and there is also a need to understand their limitations.

IV. International policy responses and challenges

33. The solutions required for global environmental problems cannot only be taken by sovereign nations or industry alone. Shifting the global economy onto a sustainable path requires an unprecedented degree of international cooperation. The international community provides an ongoing, multi-stakeholder platform to discuss current priority issues, and contributes to building knowledge and expertise to help decision makers in all sectors of society make environmentally informed choices.

34. Regular assessments of resource consumption, emissions and implementation of policies are required to guide rational and effective decision-making for environmental policy formulation, implementation and evaluation. Currently, however, international assessments and inventories of industrial emissions and performance data are seriously lacking. Where national inventories do exist, they are rarely harmonized and often outdated, making regional comparisons and global evaluations extremely difficult. Faced with these difficulties, a number of United Nations agencies and other bodies do report on global and regional environmental trends. The 1997 *Global Environmental Outlook*, for example, acts as an early warning system and provides an essential tool to speed up the pace of environmental action, set priorities and support informed decision-making. It is an important first step to reviewing major environmental issues from a regional perspective and evaluating policy responses that address regional priority concerns.

35. The development of cost-effective, meaningful and useful methods for the regular assessment, monitoring and review of the environmental performance of industry at the local, national, regional and global levels is urgently required. Investment should be made for new and better data collection of key environmental impacts from industrial activities, the harmonization of national databases and the acquisition of global datasets. Particular attention should be paid to aggregate assessments of each industry sector's environmental performance.

36. One of the main barriers to the adoption of cleaner, eco-efficient technologies and management tools by Governments and industry is a lack of information. Various international organizations, in particular the United Nations Environment Programme (UNEP), the United Nations Industrial Development Organization (UNIDO) and the United Nations Conference on Trade and Development, have been striving to eliminate this barrier by providing practical and easy-to-use materials and by facilitating information exchange. These activities have met with success and should be further supported.

37. A number of programmes have been set up to increase worldwide awareness of the preventive strategy embodied in cleaner production, and to help government and industry develop programmes and activities that will expand the adoption of cleaner production know-how and management approaches. In particular, nine UNEP/UNIDO national cleaner production centres have been established to offer training and technical assistance. In addition, information is gathered and disseminated through publications (case studies and technical reports), databases, and information exchange systems, such as the UNEP International Cleaner Production Information Clearinghouse (ICPIC). These efforts need to be continued and supported.

38. To encourage greater awareness and adoption of the preventative cleaner production strategy by public and private sector societal leaders, an international declaration on cleaner production is under formulation. To be launched

at UNEP's Fifth High-Level International Seminar on Cleaner Production, to be hosted by the Government of the Republic of Korea, this declaration will be a public but non-legally binding commitment on behalf of signatories to give priority to and to monitor progress in implementing preventative strategies in environmental policy and management.

39. To further encourage widespread adoption of the cleaner production approach, the international community could consider adopting a goal for resource productivity. The recommended target is that factor 4 is to be achieved between 2020 to 2030 and factor 10 by 2050. If currently available, cleaner technologies were widely applied, improvements in the order of factor 4 could be reached by the year 2020-2030.

40. In this era of globalization, it is clear that the imperatives of environmental sustainability must be carefully balanced with the requirements of an open world trade system. Currently, there is a widespread lack of integration of environmental objectives with economic and trade objectives. With an increasing trend towards trade liberalization, there is the possibility that some environmental problems could become worse in the absence of appropriate domestic controls. Full appreciation of the environmental issues associated with the globalization of international trade has not been reached.

41. In addition, price reforms which begin to internalize the environmental costs of economic activities are critical if a more sustainable use of natural resources is to be achieved. Current market distortions too often encourage short-term, wasteful and destructive consumption patterns. The international community should therefore examine the environmental impacts of taxes and subsidies.

42. Development aid designated for environmental purposes has often been directed at pollution control projects, although many international institutions are becoming more interested in preventative activities. In addition, other aid programmes do not always take into account the environmental dimension. Aid and lending institutions should thus be further encouraged to make cleaner production investments possible.

43. There is an increasing trend to shift from public towards private-sector investment in developing countries and economies in transition, and since national Governments can only provide a fraction of the necessary development aid, there is a real risk that vital investment projects may not be undertaken because they may not appear to be the most profitable short-term option. Financiers and private bankers therefore have a crucial role to play in incorporating the environmental dimension into their investment projects. In addition, recent negotiations by OECD to negotiate a multilateral agreement on investment should fully recognize the importance of environmental concerns.

44. International, regional and multilateral environmental agreements refer increasingly to prevention and/or efficiency activities to mitigate global environmental problems. Some international conventions, in particular the Montreal Protocol on Substances that Deplete the Ozone Layer, have made provisions for information clearing house functions. Under the multilateral fund established under the Montreal Protocol, for example, UNEP was given the responsibility for gathering information, holding workshops and training courses, networking, conducting country programmes and acting as an information clearing house. This UNEP programme has been instrumental in building the capacity and raising awareness among business, industry and Governments of the economic and performance benefits to be realized through compliance with the Montreal Protocol. This experience could serve as a useful model to be replicated under other international agreements with a view to promoting an integrated response to the variety of environmental challenges addressed under these agreements.

Notes

[1] See World Business Council for Sustainable Development and International Institute for Environment and Development, *A Changing Future for Paper* (London, 1996).